UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,345	11/12/2003	David Chimitt	TN313	6037

27276   7590   09/20/2010
UNISYS CORPORATION
Office of the General Counsel
801 Lakeview Drive, Suite 100
MailStop: 2NW
BLUE BELL, PA 19422

EXAMINER
PARK, ILWOO

ART UNIT	PAPER NUMBER
2182	

MAIL DATE	DELIVERY MODE
09/20/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 10/706,345
Filing Date: November 12, 2003
Appellant(s): CHIMITT ET AL.

Richard J. Gregson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 7/8/2010 appealing from the Office action

mailed 6/9/2009.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

None.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application: Claims 1-5, 7, 9, 11, 12, 14-16, and 18-25.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being

maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are

provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in

the Appendix to the appellant's brief.

(8) Evidence Relied Upon

The following is a listing of the evidence (e.g., patents, publications, Official

Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

US2003/0158836 A1   VENKATESH et al   8-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1.   **Claims 1-5, 7, 9, 11, 12, 14-16, and 18-25 are rejected under 35 U.S.C. 112,**

first paragraph, as failing to comply with the written description requirement.

The claim(s) contains subject matter which was not described in the specification

in such a way as to reasonably convey to one skilled in the relevant art that the

inventor(s), at the time the application was filed, had possession of the claimed

invention. The Specification including original claims does not include "file system."

Thus, the Specification does not support "file system" or "before the IRP reaches a file

system associated with the IRP."

2.   **Claims 1, 2, 4, 5, 7, 9, 11, 12, 14, 16, and 18-25 are rejected under 35**

U.S.C. 102(e) as being anticipated by Venkatesh et al. [US 2003/0158836 A1].

As for claim 1, Venkatesh et al teach a method for processing input/output

request packets (IRPs) directed to a Data Volume for providing a single logical storage

device to users and applications of a computing system [e.g., "meta file system that

appears to a user or application program to be a single file system" in paragraph 0083;

"meta file system manager...permitting users and application programs...as if the meta

file system were one large conventional file system" in paragraph 0035], the Data

Volume having a meta-data extent and at least one data extent [e.g., metadata 158,

data 157 stored on cached disk array 114 in fig. 10; or file system metadata, directories,

and files in fig. 1], wherein the meta-data extent and at least one data extent are Basic

Volumes, and the method is implemented above a Basic Volume Manager [e.g., "a

storage layer for cache management and mapping of logical storage locations to

physical storage locations on disk" in paragraph 0006; or file systems 119-122 in fig. 8],

the method comprising the steps of:

intercepting an initial IRP [e.g., "client makes a request for access to a file stored

in a cached disk array 110 over the data network 111", the request is received by NFS

FAP software module 141 or CIFS FAP software module 142 in paragraph 0061, fig. 9]

before the IRP reaches a file system [e.g., "file systems A:, B:, C:, D: 119-122 on

cached disk array 114", file system 121 in figs. 8 and 10] associated with the IRP;

evaluating [e.g., "translations of NFS requests to the intended physical file

storage devices" in paragraph 0057; or "These subsequent requests are interpreted by

the NFS routines 141 and forwarded to the meta file system manager 146" in paragraph

0061] the initial IRP by a first volume filter [e.g., "software structure that is replicated in

each data mover 115" in paragraph 0057] associated with the meta-data extent to

determine the meta-data extent to handle the IRP [e.g., 'meta file system manager 146

includes a routine for accessing the root directory and checking the meta file system

flag and a routine for accessing a directory and checking an attribute' in paragraphs

0059, 0060, "meta file system routines to recognize and interpret external links to

objects in other file system cells" in paragraph 0059; "the meta file system manager 146

may need data or metadata of a file system object" in paragraph 0063];

    directing [e.g., "forwarding the request through the Virtual File System (VFS) to

the meta file system manager 146" in paragraph 0062; "The meta file system manager

146 includes a routine for accessing the root directory of a file system cell" in paragraph

0059; "In such case, meta file system manager 146 accesses a file system routing table

148 in order to determine the data mover that owns the file system object" in paragraph

0063] the IRP by the first volume filter to the appropriate meta-data extent; and

    redirecting [e.g., "forwarding the request to the data mover that owns the file

system" in paragraph 0066; "If the meta file system flag for the file system cell is not set,

conventional file manager routines in the file system manager are called to access the

file system" in paragraphs 0059, 0045] the IRP from the meta-data extent to a second

volume filter [e.g., "If the data mover 115 owns the object, then the object is local, and

the meta file system manager 146 accesses data or metadata of the file system through

UxFS 144. If the data mover 115 does not own the object, then the object is said to be

remote and the data mover 115 is said to be secondary ... the meta file system

manager 146 accesses data or metadata of the file system through a Multiplex File

System (MPFS) 152" in paragraphs 0063, 0066] associated with the at least one data

extent; and

returning a response [e.g., "obtaining metadata" in paragraph 0078] to the initial

IRP from the second volume filter associated with the at least one data extent;

wherein the meta-data extent is a first logical drive and the at least one data

extent is a second logical drive [e.g., metadata 158, data 157 in fig. 10; "the file system

cell named A: is essentially a repository for metadata of the user-visible file system",

"file system cells (B:, C:, and D:) containing user or application files" in paragraph 0055];

the Data Volume appears as a single logical storage device to the users and the

applications ["meta file system that appears to a user or application program to be a

single file system" in paragraph 0083; "meta file system manager...permitting users and

application programs...as if the meta file system were one large conventional file

system" in paragraph 0035]; and

the meta-data extent comprises configuration information [e.g., "volume label,

ownership, access permission, time stamps, updates, consistency flag, etc." in

paragraph 0033] for use in setting up and maintaining the Data Volume.

3.   As for claim 2, Venkatesh et al teach the IRP is initiated by an originator [e.g.,

'client' in paragraph 0061] of input/output (I/O).

4.   As for claim 4, Venkatesh et al teach the meta-data extent is associated with a

plurality of data extents [paragraph 0033].

5.   As for claims 5, 11, and 24, Venkatesh et al teach the plurality of data extents are

located on a plurality of physical disks [e.g., data storage 120-122 in fig. 8].

6.   As for claim 7, Venkatesh et al teach creating additional IRPs by the volume

filter, each additional IRP being derived from the initiated IRP and related to a single

data extent [e.g., file lock request in order to obtain a lock, new metadata, and metadata

version number in paragraph 0065, notification of a release of the lock in paragraph

0067].

7.   As for claim 9, Venkatesh et al teach a method for storing data across at least

one physical disk and presenting the data as a single virtual disk [e.g., "meta file system

that appears to a user or application program to be a single file system" in paragraph

0083; "meta file system manager…permitting users and application programs…as if the

meta file system were one large conventional file system" in paragraph 0035],

comprising the steps of:

        intercepting [e. g., "client makes a request for access to a file stored in a cached

disk array 110 over the data network 111", the request is received by NFS FAP software

module 141 or CIFS FAP software module 142 in paragraph 0061, fig. 9] a first

input/output request packet (IRP) from an originator before the IRP reaches a file

system [e.g., "file systems A:, B:, C:, D: 119-122 on cached disk array 114", file system

121 in figs. 8 and 10] associated with the IRP;

        forwarding [e.g., "forwarding the request through the Virtual File System to the

meta file system manager 146" in paragraph 0062] the first IRP to a first volume filter

[e.g., meta file system manager 146; "software structure that is replicated in each data mover 115" in paragraph 0057; fig. 9] associated with the meta-data extent;

creating an additional IRP [e.g., file lock request in order to obtain a lock, new metadata, and metadata version number in paragraph 0065, notification of a release of the lock in paragraph 0067] by the first volume filter for each data extent affected by the first IRP;

transmitting ["forwarding the request to the data mover that owns the file subsystem cell" in paragraph 0066] each additional IRP to a second volume filter ["other data mover having software structure that owns the file system" in paragraphs 0063, 0066] associated with each data extent affected by the first IRP;

allowing each additional IRP to pass through the second volume filter associated with volume filter of each data extent affected by the first IRP; and

returning a response ["obtaining metadata" in paragraph 0078] to the first IRP from each second volume filter associated with the at least one data extent to the originator of I/O.

8.   As for claim 12, Venkatesh et al teach the data extents affected by the first IRP are located on separate physical disks [e.g., offline storage medium and online storage medium in paragraph 0077].

9.   As for claim 14, Venkatesh et al teach a computer system for providing a single Data Volumes of data storage to users and applications of the computing system, the system comprising:

a plurality of storage clients connected to at least one storage server across a

computer network [fig. 8];

a plurality of magnetic disks wherein Data Volumes may be created [fig. 3] and

virtually presented to said storage clients, each of Data Volumes having a meta-data

extent and at least one data extent [fig. 2], the meta-data extent including a first volume

filter [e.g., "software structure that is replicated in each data mover 115" in paragraph

0057; fig. 9] adapted to intercept [e.g., "These subsequent requests are interpreted by

the NFS routines 141 and forwarded to the meta file system manager 146" in paragraph

0061] and redirect [e.g., "forwarding the request to the data mover that owns the file

system" in paragraph 0066; "If the meta file system flag for the file system cell is not set,

conventional file manager routines in the file system manager are called to access the

file system" in paragraphs 0059, 0045] input/output request packets (IRPs) received

from one of the storage clients, before the IRP is received by an associated file system

[e.g., "file systems A:, B:, C:, D: 119-122 on cached disk array 114", file system 121 in

figs. 8 and 10], to a second volume filter ["other data mover having software structure

that owns the file system" in paragraphs 0063, 0066] associated with the at least one

data extent, said first volume filter configured to create an additional IRP [e.g., file lock

request in order to obtain a lock, new metadata, and metadata version number in

paragraph 0065, notification of a release of the lock in paragraph 0067] for each data

extent affected by the IRP; the second volume filter associated with each of the at least

one data extent returns a response [e.g., "obtaining metadata" in paragraph 0078] to the

IRP, and wherein the first and second volume filters are implemented above a Basic

Volume Manager [e.g., "a storage layer for cache management and mapping of logical

storage locations to physical storage locations on disk" in paragraph 0006; or file

systems 119-122 in fig. 8]; and

a central management facility [e.g., control station 123 in fig. 8] for controlling the

at least one storage server;

wherein the meta-data extent is a first logical drive and the at least one data

extent is a second logical drive [e.g., metadata 158, data 157 in fig. 10];

the Data Volume appears as a single logical storage device to the users and the

applications ["meta file system that appears to a user or application program to be a

single file system" in paragraph 0083; "meta file system manager...permitting users and

application programs...as if the meta file system were one large conventional file

system" in paragraph 0035]; and

the meta-data extent comprises configuration information [e.g., "volume label,

ownership, access permission, time stamps, updates, consistency flag, etc." in

paragraph 0033] for use in setting up and maintaining the Data Volume.

10.   As for claim 16, Venkatesh et al teach each storage client is presented with a

virtual disk including at least one Date Volume having a meta-data extent and at least

one data extent [paragraph 0035; fig. 1].

11.   As for claim 18, Venkatesh et al teach the at least one data extent is a plurality of

data extents and the IRPs are redirected to the data extents based on which data

extents are affected by the IRPs [e.g., pointer of the object for accessing the object in

paragraphs 0072, 0073, sending a file lock request using file system ID in figs. 10 and 13].

12.   As for claim 19, Venkatesh et al teach each storage client is presented with a particular Date Volume having a meta-data extent and at least one data extent [paragraph 0035; fig. 1].

13.   As for claim 20, Venkatesh et al teach the Date Volume is a simple volume [fig. 1].

14.   As for claim 21, Venkatesh et al teach the Date Volume is a spanned volume [fig. 1].

15.   As for claims 22 and 25, Venkatesh et al teach the Date Volume includes at least three Basic Volumes and a volume filter is logically disposed above said Basic volumes [figs. 2 and 9].

16.   As for claim 23, Venkatesh et al teach a volume filter for redirecting input/output request packets (IRPs) sent from an input/output (I/O) originator, the volume filter comprising:

intercepting means for intercepting [e.g., "client makes a request for access to a file stored in a cached disk array 110 over the data network 111", the request is received by NFS FAP software module 141 or CIFS FAP software module 142 in paragraph 0061, fig. 9; "VFS translated NFS Common File System requests" in paragraph 0057] IRPs sent to a meta-data extent associated with a Basic Volume before the IRP is received by an associated file system [e.g., "file systems A:, B:, C:, D: 119-122 on cached disk array 114", file system 121 in figs. 8 and 10];

evaluating means [e.g., "translations of NFS requests to the intended physical file storage devices" in paragraph 0057; or "These subsequent requests are interpreted by the NFS routines 141 and forwarded to the meta file system manager 146" in paragraph 0061] for evaluating IRPs to determine a meta-data extent to handle the IRP [e.g., 'meta file system manager 146 includes a routine for accessing the root directory and checking the meta file system flag and a routine for accessing a directory and checking an attribute' in paragraphs 0059, 0060, "meta file system routines to recognize and interpret external links to objects in other file system cells" in paragraph 0059; "the meta file system manager 146 may need data or metadata of a file system object" in paragraph 0063]; and

redirecting means [e.g., "forwarding the request to the data mover that owns the file system" in paragraph 0066; "If the meta file system flag for the file system cell is not set, conventional file manager routines in the file system manager are called to access the file system" in paragraphs 0059, 0045] for redirecting the IRPs to at least one data extent associated with at least one other Basic Volume wherein a plurality of data extents are associated [fig. 8; paragraph 0010] with an equal number of Basic Volumes; and

creating means for creating an additional IRP [e.g., file lock request in order to obtain a lock, new metadata, and metadata version number in paragraph 0065, notification of a release of the lock in paragraph 0067] for each data extent affected by a redirected IRP

wherein the meta-data extent is a first logical drive and the at least one data

extent is a second logical drive [e.g., metadata 158, data 157 in fig. 10];

the Data Volume appears as a single logical storage device to the users and the

applications ["meta file system that appears to a user or application program to be a

single file system" in paragraph 0083; "meta file system manager...permitting users and

application programs...as if the meta file system were one large conventional file

system" in paragraph 0035]; and

the meta-data extent comprises configuration information [e.g., "volume label,

ownership, access permission, time stamps, updates, consistency flag, etc." in

paragraph 0033] for use in setting up and maintaining the Data Volume.

17.   Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Venkatesh et al. [US 2003/0158836 A1] in view of well known in the art.

As for claim 3, Venkatesh et al do not disclose the originator of I/O is a Small

Computer Interface Target Mode Driver (SCSITMD); however, a Small Computer

Interface Target Mode Driver (SCSITMD) for issuing an I/O request for file access is

well known in the art. At the time the invention, one of ordinary skill in the art would

have been motivated to include the Small Computer Interface Target Mode Driver

(SCSITMD) for issuing an I/O request in order to increase applicability for adapting

prevalent SCSI connection for accessing files.

(10) Response to Argument

The Examiner summarizes the various points raised by the Appellant and

addresses replies individually.

a)   Regarding claim rejections under 35 U.S.C. 112, first paragraph for the new

matter "file system" or "before the IRP reaches a file system associated with the IRP",

the Appellant shows, from the specification, "above the Basic Volumes so that IRPs are

processed by the volume filter prior to being processed by the Basic Volume Manager"

for the support [pages 9 and 10 in Appeal Brief].

The Examiner respectfully disagrees that the Appellant equates the "Basic

Volume Manager" to a "file system." A volume manager is for managing physical or

logical volumes used with disk storages, databases, or a file system. There may be a

system including both a file system and a volume manager [e.g., Solalis ZFS, Veritas

Storage Foundation Basic may be combined a file system and a volume manager].

Even though the Basic Volume Manager could including a file system, a volume

manager is not a file system. Nowhere in the Specification discloses "file" or "file

system". Thus, the specification does not support the limitation "file system" or "before

the IRP reaches the Basic Volume Manager not a file system".

b)   The Appellant alleges that the Examiner interprets the "volume filter" of claim 1

as a "data mover" in Venkatesh because the volume filter, which could be implemented

as a driver and would need to communicate to the operating system, would need be

implemented outside of the native operating system to intercept an IRP before it is

received by associated file system and to implement the volume filter above a Basic

Volume Manager while a data mover of Venkatesh being a high-end commodity

computer could not be implemented above a Basic Volume Manager, nor could it

intercept an input/output request packet before it is received by the associated file

system. Figure 9 illustrates that the file system (144) is part of the data mover (115).

The data mover cannot act independently of the file system in figure 9, and therefore

cannot perform the functions of the claimed volume filters [pages 8 and 11 in Appeal

Brief]

The Examiner respectfully disagrees. Firstly, the claims don't contain arguing

limitations, such as the "driver", "operating system", "outside of the native operating

system", etc. Further, the Examiner does not interpret the "volume filter" as a "data

mover" of Venkatesh. The Examiner equates the "volume filter" as a "software structure

that is replicated in each data mover", such as a meta file system manager 146 in fig. 9,

which intercepts an input/output request from a client for accessing a file in a cached

array disks having file system and implemented above a Basic Volume Manager [e.g.,

"a storage layer for cache management and mapping of logical storage locations to

physical storage locations on disk" in paragraph 0006 or file systems 119-122 located

on a cached disk array 114 as viewed within a single file server 110 in fig. 8: the meta

file system manager 146 in a file system layer is above the storage layer]. Venkatesh

shows those software structure volume filters, such as meta file system manager 146,

Unix based File System (UxFS) 144, Multiplex File System (MPFS) 152, and UxFS 159,

MPFS 152, are all implemented within a single file server [figs. 8-10] for processing an

input/output request to access a file in a file system stored on array disks, respectively.

c) *The Appellant further alleges that the software implemented in Venkatesh's data*

mover does not intercept IRPs before they are received by the associated file system

[pages 11 and 12 in Appeal Brief]

Again, the data mover of Venkatesh is not the volume filter of claims. Venkatesh

teaches that the volume filter [e.g., meta file system manager 146 in a data mover 115

which is hierarchically above the file system 119-122 in figs. 8-10 for the requests

originated from the client] intercepts I/O requests [e.g., "These subsequent requests are

interpreted by the NFS routines 41 and forward to the meta file system manager 146" in

paragraph 0061; "The CIFS server routines 142 receives CIFS request from the client

and forward the request through the Virtual File System (VFS) to the meta file system

manager 146" in paragraph 0062] before they are received by the associated file

system [e.g., file systems 119-122 on the cached disk array 114 in fig. 8].

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the

Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Ilwoo Park/
Primary Examiner, Art Unit 2182

Conferees:

/Tariq Hafiz/
Supervisory Patent Examiner, Art Unit 2182

/Jason D Cardone/
Supervisory Patent Examiner, Art Unit 2100